

JP '789 (JP 0908789) and further in view of Nonoyama (U.S. Patent 5,646,924). The Examiner adds the teachings of Miyauchi (U.S. Patent 5,878,021), pertaining to two protective films and two reflective layers, to reject claims 14-17 and 19. Applicants traverse.

The Present Invention and Its Advantages

The present invention pertains to an information recording medium that has a nitrogen gradient that reduces the incidence of jitter, and the medium additionally contains elements that retard the diffusion of sulfur so as to prevent deterioration of the properties of the recording medium. As set forth in claim 1, the information recording medium has a substrate, a first dielectric protective film over the substrate, an interface film over the first protective film, at least one recording film over the interface film and a second dielectric protective film over and in contact with the recording film. The recording film undergoes change in atomic arrangement upon irradiation with recording beams. Also, the recording film is not in contact with the first protective film.

An important aspect of the invention is the presence of a nitrogen gradient that helps reduce jitter. Independent claim 1 recites that "the changing amount of the nitrogen content in the direction of thickness of the film with the interface between the

films as a boundary is 1-50 at.%/nm, and the recording film is not in contact with the first protective film."

The importance of the nitrogen gradient is discussed in the paragraph bridging pages 3 and 4 and in the paragraph starting at page 6, line 18 of the specification. Also, the Best Mode discussion at pages 7-10 of the specification evaluates the importance of nitrogen content. Further, the Examples and Comparative Examples look at the nitrogen content, and at page 18, lines 4-22, the effect of the nitrogen content on jitter is compared.

An additional important aspect of the invention is the incorporation of an element that retards the diffusion of sulfur or has the effect of not deteriorating the optical constants or crystallization rate, even if diffusion occurs. That is, the recording film contains a Ge-Sb-Te base material and 0.1-10 at.% of at least one element selected from Si, P, V, Mn, Fe, Co, Ni, Cu, Zn, Nb, Mo, Ru, Rh, Pd, Ag, Cd, Sn, Ta, Os, Ir, Pt, Au, Tl, Pb, Bi or Cr. Thus, a barrier layer inhibiting the diffusion of sulfur is formed to prevent deterioration of rewriting durability.

Distinctions of the Invention Over the Cited Art

Distinctions of the invention over Shinozuka and the secondary references are of record in the application. Shinozuka fails to disclose the presence of nitrogen on both sides of the recording

and protecting layers (as is acknowledged by the Examiner), and changing the amount of nitrogen content. Shinozuka additionally fails to disclose the 1-50 at.%/nm nitrogen content.

However, the Examiner fails to appreciate the effect of controlling the nitrogen content. At page 3 of the Office Action, the Examiner states: "Although Shinozuka does not explicitly disclose the precise %/nm, it would be obvious to one of ordinary skill in the art to optimize the components since discovering the optimum or workable ranges involves only routine skill in the art. Shinozuka does not disclose nitrogen content on both sides of the recording and protective layers, containing ZnS-SiO₂."

The importance of the nitrogen gradient is discussed in the paragraph bridging pages 3 and 4 and in the paragraph starting at page 6, line 18 of the specification. Also, the Best Mode discussion at pages 7-10 of the specification evaluates the importance of nitrogen content. Further, the Examples and Comparative Examples look at the nitrogen content, and at page 18, lines 4-22, the effect of the nitrogen content on jitter is compared.

Further, Shinozuka fails to disclose or suggest doping the Ge-Sb-Te material to retard the sulfur diffusion.

Further, the secondary references of JP '789, Nonoyama or Miyauchi fail to address the deficiencies of Shinozuka in suggesting a claimed embodiment of the invention. Thus, a *prima*

facie case of obviousness has not been made over Shinozuka in the secondary references. Further, [the invention shows unexpected results over the conventional art.] For example, the Examiner is requested to turn his attention to the effect of the nitrogen gradient on jitter discussed at page 18, lines 4-22 of the specification. Thus, the advantages of the invention are clear. 2/3

Therefore, Shinozuka and the secondary references fail to allege *prima facie* obviousness, and any obviousness that can be alleged is rebutted by the unexpected results in the specification. Accordingly, this rejection is overcome and withdrawal thereof is respectfully requested.

Conclusion

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Robert E. Goozner, Ph.D. (Reg. No. 42,593) at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

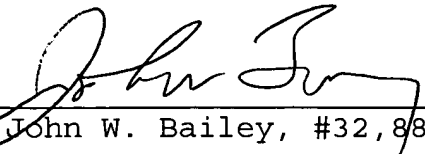
Attached hereto is a marked-up version of the changes made to the application by this Amendment.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees

required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

BIRCH, STEWART, KOLASCH & BIRCH, LLP

By 
John W. Bailey, #32,881

JWB/REG:jls
0152-0531P

P.O. Box 747
Falls Church, VA 22040-0747
(703) 205-8000